

CLAIM LISTING

A listing of an entire set of claims is submitted herewith per 37 CFR §1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) ~~For use in a system (100) capable of creating visual summaries of video material, an~~ An apparatus (130, 200) for creating a compact visual summary of video material, ~~said apparatus (130, 200) comprising:~~

a visual summary controller (130, 200) ~~capable of~~ operable for:

receiving keyframes of said video material;

~~wherein said visual summary controller (130, 200) is capable of~~

extracting frame signatures from said keyframes to establish a plurality of family histograms;

~~, and capable of using said frame signatures~~ ordering said plurality of family histograms to create respective superhistograms each including multiple family histograms from said keyframes, and capable of

~~using said frame signatures and said superhistograms to select~~

selecting representative keyframe images for each superhistogram to create a compact visual summary of said video material,

wherein said representative keyframe images for each superhistogram include at least one of (1) the first image in each family histogram, (2) ~~the most meaningful image in said each superhistogram,~~ (3) a randomly chosen image, and (4) an image that is closest to ~~the cluster~~ a center of each family histogram.

2. (Currently Amended) ~~The apparatus (130, 200) as claimed in~~ of Claim 1, wherein said visual summary controller (130, 200) is ~~capable of~~ operable for filtering said keyframes and extracting frame signatures from said filtered keyframes before using said frame signatures to create said superhistograms to create a compact visual summary of said video material.

3. (Currently Amended) ~~The apparatus (130, 200) as claimed in~~ of Claim 2, wherein said visual summary controller (~~130, 200~~) is ~~capable of~~ operable for creating said compact visual summary of said video material by using said superhistograms to cluster said

filtered keyframes, and by adding a representative keyframe from said clustered keyframes to said compact visual summary of said video material.

4. (Currently Amended) The apparatus (130, 200) ~~as claimed in~~ of Claim 2, wherein said frame signature is a histogram.

5. (Currently Amended) The apparatus (130, 200) ~~as claimed in~~ of Claim 3, wherein the distance measure for clustering is equal to a histogram difference calculated by one of: L1 distance measure method, L2 distance measure method, histogram intersection method, Chi Square test method, and bin-wise histogram intersection method.

6. (Cancelled)

7. (Currently Amended) The apparatus (130, 200) ~~as claimed in~~ of Claim 5, wherein said visual summary controller (130, 200) is ~~capable of~~ operable for selecting a family histogram to use to create said compact visual summary of said video material.

8. (Currently Amended) The apparatus (130, 200) ~~as claimed in~~ of Claim 1, wherein said visual summary controller (130, 200) further comprises~~[[:]]~~ a visual summary retrieval module (180) ~~capable of~~ operable for retrieving a compact visual summary stored in a memory unit (120) and causing said compact visual summary to be displayed in response to a user request.

9. (Currently Amended) The apparatus (130, 200) ~~as claimed in~~ of Claim 1, wherein said visual summary controller (130, 200) is ~~capable of~~ operable for using said compact visual summary to access at least one portion of said video material.

10. (Currently Amended) The apparatus (130, 200) ~~as claimed in~~ of Claim 3, wherein said visual summary controller (130, 200) is ~~capable of~~ operable for using said compact visual summary to create new video material.

11. (Currently amended) A system (100) ~~capable of creating~~ operative to create visual summaries of video material, said system (100) comprising an apparatus (130, 200) for creating a compact visual summary of video material, said apparatus (130, 200) comprising:

a visual summary controller (130, 200) ~~capable of~~ operable for:

receiving keyframes of said video material~~[[:]]~~,

~~wherein said visual summary controller (130, 200) is capable of~~
extracting frame signatures from said keyframes to provide a plurality of
family histograms, and capable of using
ordering said plurality of family histograms frame signatures to create
respective superhistograms, each superhistogram including multiple families of
histograms ~~from said keyframes, and capable of using said frame signatures and said~~
~~superhistograms to select~~
selecting representative keyframe images for each superhistogram to
create a compact visual summary of said video material,

wherein said representative images for each superhistogram include at least one of
(1) the first image in each family histogram, (2) ~~the most meaningful image in each~~
~~superhistogram~~, (3) a randomly chosen image, and (4) an image that is closest to ~~the~~
~~cluster~~ a center of each family histogram.

12.(Currently Amended) The system (100) ~~as claimed in~~ of Claim 11, wherein said visual
summary controller (130, 200) is ~~capable of filtering~~ operative to filter said keyframes
and ~~extracting~~ extract frame signatures from said filtered keyframes before using said
frame signatures to create said superhistograms to create a compact visual summary of
said video material.

13. (Currently Amended) The system (100) ~~as claimed in~~ of Claim 12, wherein said
visual summary controller (130, 200) is ~~capable of creating~~ operative to create said
compact visual summary of said video material by using said superhistograms to cluster
said filtered keyframes, and by adding a representative keyframe from said clustered
keyframes to said compact visual summary of said video material.

14. (Currently Amended) The system (100) ~~as claimed in~~ of Claim 12, wherein said
frame signature is a histogram.

15. (Currently Amended) The system (100) ~~as claimed in~~ of Claim 13, wherein the
distance measure for clustering is equal to a histogram difference calculated by one of:
L1 distance measure method, L2 distance measure method, histogram intersection
method, Chi Square test method, and bin-wise histogram intersection method.

16. (Cancelled)

17. (Currently Amended) The system (100) ~~as claimed in~~ of Claim 16-13, wherein said visual summary controller (130, 200) is ~~capable of selecting~~ operative to select a family histogram to use to create said compact visual summary of said video material.

18. (Currently Amended) The system (100) ~~as claimed in~~ of Claim 11, wherein said visual summary controller (130, 200) further comprises:

a visual summary retrieval module (180) ~~capable of retrieving~~ operative to retrieve a compact visual summary stored in a memory unit (120) and ~~causing~~ cause said compact visual summary to be displayed in response to a user request.

19. (Currently Amended) The system (100) ~~as claimed in~~ of Claim 13, wherein said visual summary controller (130, 200) is ~~capable of using~~ operative to use said compact visual summary to access at least one portion of said video material.

20. (Currently Amended) The system (100) ~~as claimed in~~ of Claim 13, wherein said visual summary controller (130, 200) is ~~capable of using~~ operative to use said compact visual summary to create new video material.

21. (Currently Amended) ~~For use in a system (100) capable of operable for creating visual summaries of video material, a~~ A method for creating a compact visual summary of video material, said method comprising the steps of:

receiving in a visual summary controller (130, 200) keyframes of said video material;

extracting frame signatures from said keyframes to establish a plurality of family histograms;

ordering said plurality of family histograms to create respective superhistograms each including multiple family histograms using said frame signatures to create superhistograms from said keyframes; and

using said frame signatures and said superhistograms to select representative keyframe images for each superhistogram to create a compact visual summary of said video material ,

wherein said representative images of each superhistogram include at least one of (1) the first image in each family histogram, (2) ~~the most meaningful image in~~ each

~~superhistogram~~, (3) a randomly chosen image, and (4) an image that is closest to the ~~cluster~~ a center of each family of histograms.

22. (Currently Amended) The method as claimed in Claim 21 further comprising the steps of:

filtering said keyframes received in said visual summary controller (130, 200);
and

extracting frame signatures from said filtered keyframes before using said frame signatures to create said superhistograms to create a compact visual summary of said video material.

23. (Original) The method as claimed in Claim 22 further comprising the steps of:

using said histograms to cluster said filtered keyframes; and

adding a representative keyframe from said clustered keyframes to said compact visual summary of said video material.

24. (Currently Amended) The method ~~as claimed in~~ of Claim 23, wherein the distance measure for clustering is equal to a histogram difference calculated by one of: L1 distance measure method, L2 distance measure method, histogram intersection method, Chi Square test method, and bin-wise histogram intersection method.

25. (Cancelled)

26. (Currently Amended) The method ~~as claimed in~~ of Claim 23 further comprising the ~~step of:~~ selecting a family histogram to use to create said compact visual summary of said video material.

27. (Currently Amended) The method ~~as claimed in~~ of Claim 23 further comprising the ~~steps of:~~

retrieving a compact visual summary stored in a memory unit (120); and

causing said compact visual summary to be displayed in response to a user request.

28. (Currently Amended) The method ~~as claimed in~~ of Claim 23 further comprising the ~~step of~~ [[:]] causing said visual summary controller (130, 200) to use said compact visual summary to access at least one portion of said video material.

29. (Currently Amended) The method ~~as claimed in~~ of Claim 23 further comprising the ~~step of~~ causing said visual summary controller (130, 200) to use said compact visual summary to create new video material.

30. (Currently amended) For use in a system (100) ~~capable of~~ operable for creating visual summaries of video material, computer-executable instructions stored on a computer-readable storage medium (125) for creating a compact visual summary of video material, the computer-executable instructions comprising the steps of:

receiving in a visual summary controller (130, 200) keyframes of said video material;

extracting frame signatures from said keyframes to provide a plurality of family histograms;

using said frame signatures to create superhistograms each having multiple families of histograms ~~from said keyframes;~~ and

using said frame signatures and said superhistograms to select representative keyframe images for each superhistogram to create a compact visual summary of said video material,

wherein said representative images of each superhistogram include at least one of (1) the first image in each family histogram, (2) ~~the most meaningful image in each superhistogram,~~ (3) a randomly chosen image, and (4) an image that is closest to ~~the cluster~~ a center of each family of histograms.

31. (Currently Amended) The computer-executable instructions stored on a computer-readable storage medium (125) ~~as claimed in~~ of Claim 30 further comprising ~~the step of:~~

filtering said keyframes received in said visual summary controller (130, 200);
and

extracting frame signatures from said filtered keyframes before using said frame signatures to create said superhistograms to create a compact visual summary of said video material.

32. (Currently Amended) The computer-executable instructions stored on a computer-readable storage medium (125) ~~as claimed in~~ of Claim 31 further comprising ~~the steps of:~~

using said histograms to cluster said filtered keyframes; and

adding a representative keyframe from said clustered keyframes to said compact visual summary of said video material.

33. (Currently Amended) The computer-executable instructions stored on a computer-readable storage medium ~~(125) as claimed in~~ of Claim 32, wherein the distance measure for clustering is equal to a histogram difference calculated by one of: L1 distance measure method, L2 distance measure method, histogram intersection method, Chi Square test method, and bin-wise histogram intersection method.

34. (Cancelled)

35. (Currently Amended) The computer-executable instructions stored on a computer-readable storage medium ~~(125) as claimed in~~ of Claim 34 30 further comprising ~~the step of:~~ selecting a family histogram to use to create said compact visual summary of said video material.

36. (Currently Amended) The computer-executable instructions stored on a computer-readable storage medium ~~(125) as claimed in~~ of Claim 30 further comprising ~~the steps of:~~ retrieving a compact visual summary stored in a memory unit ~~(125)~~; and causing said compact visual summary to be displayed in response to a user request.

37. (Currently Amended) The computer-executable instructions stored on a computer-readable storage medium ~~(125) as claimed in~~ of Claim 32 further comprising the step of: causing said visual summary controller ~~(130, 200)~~ to use said compact visual summary to access at least one portion of said video material.

38. (Currently Amended) The computer-executable instructions stored on a computer-readable storage medium ~~(125) as claimed in~~ of Claim 32 further comprising the step of: causing said visual summary controller ~~(130, 200)~~ to use said compact visual summary to create new video material

39. (New) The apparatus of Claim 1, wherein said representative frame further includes at least one of the most meaningful image in each superhistogram selected from the group consisting of a person's face and important text and a combination thereof.

40. (New) The system of Claim 11, wherein said representative frame further includes at least one of the most meaningful image in each superhistogram selected from the group consisting of a person's face and important text and a combination thereof.

41. (new) The method of Claim 21, wherein said representative frame further includes at least one of the most meaningful image in each superhistogram selected from the group consisting of a person's face and important text and a combination thereof.

42. (new) The computer executable instructions Claim 30, wherein said representative frame further includes at least one of the most meaningful image in each superhistogram selected from the group consisting of a person's face and important text and a combination thereof.